

comprises: a visual indicator display 14 in the form of an LCD panel, a key pad 16 for entering transaction details, a cash dispenser slot 18 through which bank notes (valuable media) are dispensed to a user, a display screen 20 for providing transaction information to the user, additional keys (FDKs) 22 disposed at opposite sides of the screen 20 for enabling the user to select preset functions which are displayed on the screen 20 and aligned with the FDKs 22, a receipt printer slot 24 through which a receipt for a transaction may be delivered to the user, and a sensor 26 for detecting when a user is present at the ATM 10.

FIG. 2 shows a block diagram of the ATM of FIG. 1. FIG. 2 shows a user interface module block 40 including a camera 30, the visual indicator display 14, the key pad 16, the transaction display 20, and a receipt printer module 44. The receipt printer module 44 is associated with slot 24 in the user interface 12 of the ATM 10. FIG. 2 also shows a cash dispenser module 46 which is associated with the cash dispenser slot 18, and a biometrics sensing processor unit 48 which operates in association with the camera 30 to implement biometrics sensing of the user.

The ATM 10 further comprises processor means in the form of a controller unit 50 which communicates with components of the user interface module block 40, with an operator panel 52 mounted inside the ATM 10, with the cash dispenser module 46, and with the biometrics sensing processor unit 48.

The operator panel 52 contains circuitry for enabling the operator to interact with the ATM 10. Standard operator panels 52 are used on commercially available ATMs and are well known in the art. Similarly, the cash dispenser module 46 will not be described as it is a standard feature of a conventional ATM.

The controller unit 50 includes a processor unit 54 and a non-volatile memory 56. The processor unit 54 and memory 56 may be implemented by a microcomputer having non-volatile RAM; suitable computers and memories are readily available commercially.

FIG. 3 is a simplified schematic view of a typical arrangement of the camera 30, the LCD panel 14, and a user 100. The camera 30 has a lens 32 and is coupled to the controller unit 50. The camera 30 and lens 32 are oriented along an optical axis (shown by line 60) which passes through the center area of LCD panel 14. The angle of axis 60 is selected so that it passes through the eye-level of an average height user 100. The camera 30 and lens 32 have some degree of adjustability to enable images to be recorded from users of different heights. Suitable systems comprising camera 30, lens 32, and biometrics unit 48 are available from "SENSAR" of 121 Whittendale Drive, Moorestown, N.J., USA 08057.

In use, when user 100 approaches ATM 10 the sensor 26 senses that a user 100 is present. This causes the display screen 20 to display text instructing the user 100 to look at LCD panel 14. Sensor 26 also causes LCD 14 to display visual indicators as shown in FIG. 4.

LCD panel 14 has a transparent center area 70 through which the camera 30 and lens 32 view the user 100; that is, the center area 70 is the entry point for light from a user's eye. In registration with the center area 70 are three concentric visual indicators, each having a single element. Each indicator has a center located in the center area 70, and has a different diameter to the other indicators.

Indicator 72 has the largest diameter and is colored red. Indicator 74 has the smallest diameter and is colored green. Indicator 76 has a diameter approximately mid-way between that of indicators 72 and 74, and is colored amber.

Initially, the red indicator 72 is illuminated, shortly thereafter the amber indicator 76 is also illuminated, shortly thereafter the green 74 is also illuminated. This has the effect of guiding the user's eyes to the center area 70 (through which axis 60 passes), thereby aiding capture of a clear image of the user's eye. The image is conveyed via controller unit 50 to the biometrics sensing unit 48 and an iris code is generated.

The controller unit 50 accesses a remote database (not shown) which compares the user's iris code with stored iris codes to identify the user 100. Various algorithms are available for processing an image of an iris to create an iris code.

Once the user 100 has been identified, the three visual indicators 72, 74, 76 are de-energized, so that the user's attention may be drawn to screen 20, where the user 100 is presented with a menu of the various transactions available at the ATM 10.

FIG. 5 shows alternative visual indicators in the form of pairs of elements. Each pair of elements (for example, elements 82a, b) form a visual indicator which is centered on area 70. When these indicators are used, the energizing sequence is the same as for FIG. 4, but the indicator which is furthest from the center 70 is de-energized when a closer indicator is energized. Thus, indicator 82 (elements 82a and 82b) is energized first, then indicator 82 is de-energized and indicator 86 is energized, then indicator 86 is de-energized and indicator 84 is energized.

Various modifications may be made to the above described embodiments within the scope of the present invention, for example, the shape, color, and configuration of the visual indicators may be changed. The time delay between energizing indicators may be varied or it may depend on what stage of identification the biometrics unit has reached. Visual indicators having more than two elements per indicator may be used. The camera may be located in any convenient location, for example, on the top surface of the ATM. The LCD 14 may be incorporated into a covering for the camera 30 and lens 32; so that the camera 30, lens 32, and LCD 14 form a single unit. The function of the sensor 26 may be implemented by the camera 30. It will be appreciated that a simplified camera and lens arrangement have been illustrated, in other embodiments, much more complex optical arrangements may be used; for example, the lens may be a combination of optical elements such as mirrors and/or standard lens arrangements. If the lens deflects received light, then the optical axis will not be straight. In such an embodiment, the visual indicators associated with the lens, will be associated with the part of the lens adjacent to the entry point of light from a user's eye, that is, the point at which a user looks to have an image of his/her iris recorded. In other embodiments, the iris identification system may be used in conjunction with a user entering an identification token, such as a card, so that the iris identification system verifies the identity of the user.

What is claimed is:

1. A self-service terminal comprising:

a camera including a lens for recording an image of a human iris;

a process for processing the recording image; and

a visual indicator display providing a plurality of selectively energizable visual indicators successively energized and associated with the lens for directing a user's eye towards a center of the lens of the camera.

2. A self-service terminal according to claim 1, wherein each visual indicator comprises a single indicator element at least partially surrounding the center of the lens.